

DETAILED ACTION

Status of Application

Claims 1-4, 6-12, 14, and 16-22 are pending and presented for examination.

Response to Arguments

Applicant's arguments filed 7/11/2008, regarding the rejection of claim 1 as obvious over Sekiguchi in view of Hayasaka, have been fully considered but they are not persuasive. The applicant argues that the specific ranges as claimed, for several parameters, are not obvious over the broad ranges as described in Sekiguchi and Hayasaka. However, overlapping ranges are *prima facie* evidence of obviousness. These variables would be expected to have an effect on several aspects of the resulting inkjet recording medium, for example the speed at which it can be coated, its ink absorption ability, and the running of ink on the surface of the sheet. Sekiguchi teaches the optimized parameters specifically provide for better ink absorption, image density and color development, and improved storability (column 4, lines 45-54). However, one of ordinary skill in the art at the time of the invention would have recognized that these large ranges could be further optimized to take advantage of the benefits taught by Sekiguchi but to also provide further optimized conditions with respect to other qualities of the inkjet recording medium that were not of primary interest to Sekiguchi. Therefore, it would have been within the level of one of ordinary skill in the art at the time of the invention to optimize the ranges of Sekiguchi and Hayasaka to arrive at the more specific claimed ranges through process optimization, since it has been held that where the general conditions of a claim are disclosed in

the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

See In re Boesch, 205 USPQ 215 (CCPA 1980).

Claim Objections

Claim 1 is objected to because of the following informalities: Claim 1 is objected to because it is not made clear that the invention comprises the use of either pigment a or b as well as a mixture. For clarification it might be helpful to state that "said pigment contains either one of a) a synthetic..." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 7, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims as written fail to limit the parent claim and are indefinite because they claim an average particle diameter for the particles which is outside the range of the average particle diameter of the independent claims. For examination purposes, the claim has been interpreted as the range of the independent claim for lack of a better range to choose.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 1, 2, 6-10, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (U.S. Pat. No. 6312794) in view of Hayasaka et al. (U.S. Pat. No. 5972167).

I. Regarding claims 1, 2, 7-10, and 18-20, it should be noted that the amended limitation that the inkjet recording medium is being used for offset printing has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Sekiguchi teaches a method of applying an ink receiving layer containing a synthetic silica having specific surface area preferably from 50 to 400 m²/g, an oil absorption of at least 30 mL/g, preferably at least 100 mL/g, and an average particle diameter of 0.1 to 30 μm (column 6, lines 28-34), which may contain a binder (column 7, lines 7-11), and may be applied by a gate roll coater (column 9, line 1), and subsequently dried (Examples 13-19) to provide a coating having an ink absorbing layer per one side of 1 to 7 g/m² (see Sekiguchi at claim 5). Sekiguchi further teaches that a cationic dye fixing agent may be added appropriately (column 7, lines 42-49 and Example 1, column 11). Finally, Sekiguchi also teaches that the synthetic silica is obtained by neutralizing an aqueous sodium silicate solution using sulfuric acid (a mineral acid), though Sekiguchi fails to teach wet grinding, this step is well known in the art and one of ordinary skill could have wet grinded the silica to provide the optimal particle size prior to drying with a reasonable expectation of success and a predictable result.

However, Sekiguchi is silent on the Hercules viscosity of the resulting ink absorbing layer as well as the speed at which the coating color is applied. Hayasaka teaches using a transfer roll coater at a speed of 600 m/min to about 1500 m/min (column 7, lines 2-3) to coat a

pigment and adhesive to a base material (abstract) wherein the coating has a Brookfield viscosity in the range of from about 100 to about 1500 cps (100-1500 mPa·s), see column 4, lines 49-51. Though they do not teach what the Hercules viscosity is, this Brookfield viscosity falls in the same area as the viscosity of the resulting coatings listed in the specification, therefore it will inherently have a similar Hercules viscosity, falling within the range of 5 to 30 mPa·s. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sekiguchi's method to adjust the viscosity of the coating color to 5 to 30 mPa·s to allow for applying the coating color at the speed claimed as taught by Hayasaka. One would have been motivated to modify Sekiguchi's method with Hayasaka as Hayasaka actually state that the pigments used in the present invention are not particularly limited, provided that the aspect ratio is small, and can be used for transfer roll coating colors (column 5, lines 19-22), and the synthetic silica taught by Sekiguchi would have been known to fall into this category at the time the invention was made. Further motivation is provided by Hayasaka stating that their roll coating method provides coatings having high smoothness and high gloss under low calendering conditions and the resulting paper has high opacity, stiffness and printability (column 7, lines 5-15).

II. Regarding claim 6, Sekiguchi in view of Hayasaka teach all the limitations of claim 2, however fail to teach adding the synthetic silica to the coating color without proceeding through a drying step. However, it would have been obvious to one of ordinary skill at the time of the invention to take the synthetic silica and add it directly to the coating color without proceeding through a drying step. One would have been motivated to make this modification as it would

simplify and limit the number of steps necessary in the manufacturing process, thereby increasing the rate at which the method could be performed.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi in view of Hayasaka as applied to claim 2 and in further view of Wason et al. (U.S. Pat. No. 4191742).

Regarding claim 3, Sekiguchi in view of Hayasaka teach all of the limitations of claim 2 except the use of an aluminum sulfate solution. Wason teaches a method of making synthetic silica comprising treating a sodium silicate solution with a sulfuric acid solution (mineral acid) (see Example 1) and with the additional use of aluminum sulfate (Example 2) to provide particles with an oil absorption of 118 mL/100g, surface area of 175 m²/g (Example 2) with the required size (see last column, Table 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sekiguchi and Hayasaka's method by further utilizing Wason's aluminum sulfate solution to neutralize the sodium silicate solution. One would have been motivated to modify Sekiguchi and Hayasaka's with Wason's method as it is simply the substitution of a known method of providing synthetic silica for another, and one of ordinary skill in the art at the time of the invention could have substituted Wason's method for Sekiguchi in view of Hayasaka's method with a reasonable expectation of success and the predictable result of providing synthetic silica particles with the desired properties.

4. Claims 16, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi in view of Hayasaka and Shimada et al. (U.S. Pat. No. 5281467).

Regarding claims 16, 21 and 22, it should be noted that the limitation that the inkjet recording medium is being used for offset printing has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hira*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Sekiguchi teaches a method of applying an ink receiving layer containing a pigment (synthetic silica) having specific surface area preferably from 20 to 400 m²/g, an oil absorption of at least 30 mL/g, preferably at least 100 mL/g, and an average particle diameter of 0.1 to 30 µm (column 6, lines 28-34), which may contain a binder (column 7, lines 7-11), and may be applied by a gate roll coater (column 9, line 1), and subsequently dried (Examples 13-19) to provide a coating having an ink absorbing layer per one side of 1 to 7 g/ m² (see Sekiguchi at claim 5).

However, Sekiguchi is silent on the Hercules viscosity of the resulting ink absorbing layer as well as the speed at which the coating color is applied and the pigment being a precipitated calcium carbonate-silica composite.

Hayasaka teaches using a transfer roll coater at a speed of 600 m/min to about 1500 m/min (column 7, lines 2-3) to coat a pigment and adhesive to a base material (abstract) wherein the coating has a Brookfield viscosity in the range of from about 100 to about 1500 cps (100-

1500 mPa·s), see column 4, lines 49-51. Though they do not teach what the Hercules viscosity is, this Brookfield viscosity falls in the same area as the viscosity of the resulting coatings listed in the specification, therefore it will inherently have a similar Hercules viscosity, falling within the range of 5 to 30 mPa·s.

Shimada teaches the use of a precipitated calcium carbonate-silica composite pigment (abstract), having a BET of no greater than $80 \text{ m}^2/\text{g}$ (column 3, lines 15-19) and a particle diameter of no greater than 3 microns (column 3, lines 5-7), combined with a binder (column 3, lines 50-53) to be applied to a support with a roll coater (see Example 7). Though the pigments are different, one of ordinary skill in the art at the time of the invention would expect that utilizing the calcium carbonate-silica composite pigment having the characteristic parameters of the synthetic silica of Sekiguchi's method would still be expected to provide a comparable result in regards to the quality of the recording medium, but that further optimization would be necessary to fully optimize these values with respect to the calcium carbonate-silica pigment, as this pigment would be expected to have slightly different properties as compared to the synthetic silica pigment.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sekiguchi's method to utilize Shimada's precipitated calcium carbonate-silica composite in place of the synthetic silica and to adjust the viscosity of the coating color to 5 to 30 mPa·s to allow for applying the coating color at the speed claimed as taught by Hayasaka. One would have been motivated to modify Sekiguchi's method with Hayasaka as Hayasaka teaches that their roll coating method provides coatings having high smoothness and high gloss under low calendering conditions and the resulting paper has high opacity, stiffness and

printability (column 7, lines 5-15). Further, one would have been motivated to modify Sekiguchi with Shimada as Shimada teaches that the inkjet recording paper utilizing the calcium carbonate-silica pigment has excellent ink absorption, smoothness, gloss and water resistance, to ensure recording of high quality and high contrast (abstract).

5. Claims 4, 11, 12, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi in view of Hayasaka and Shimada as applied to claim 21 above, and further in view of Minami et al. (JP 2003-049389).

I. Regarding claims 4, 11 and 17, Sekiguchi in view of Hayasaka and Shimada teach all the limitations of claim 21, including the particle diameter limitation of claim 17 (see above), however fail to teach the method of providing the composite. Minami teaches a method of providing a composite pigment by mixing a first material, which may be precipitated calcium carbonate (0011) with an aqueous alkaline metal silicate solution (see synthetic example 1 on page 7) and maintaining the pH in a weak alkaline range such as 8-11 (see claim 4) by addition of sulfuric acid (see synthetic example 1) at a temperature less than the boiling point (see synthetic example 1), wherein the pigment can have a ratio of 70/30 calcium carbonate to silica (see synthetic example 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sekiguchi in view of Hayasaka and Shimada's method by providing the pigment by Minami's synthetic route. One would have been motivated to make this modification as it is simply the substitution of Minami's known synthetic route to provide the pigment in place of the route provided by Sekiguchi in view of Hayasaka and Shimada.

Further, one of ordinary skill could have utilized this technique in place of Sekiguchi in view of Hayasaka and Shimada's technique to reliably provide a composite particle with a reasonable expectation of success and the predictable result of providing a pigment capable of being utilized in a coating color.

II. Regarding claims 12 and 14, Sekiguchi in view of Hayasaka and Shimada and further in view of Minami teach all the limitations of claims 4 and 11, however fail to teach adding the synthetic silica to the coating color without proceeding through a drying step. However, it would have been obvious to one of ordinary skill at the time of the invention to take the calcium carbonate-silica and add it directly to the coating color without proceeding through a drying step. One would have been motivated to make this modification as it would simplify and limit the number of steps necessary in manufacturing process, thereby increasing the rate at which the method could be performed.

Conclusion

Claims 1-4, 6-12, 14, and 16-22 are pending.

Claims 1-4, 6-12, 14, and 16-22 are rejected.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT S. WALTERS JR whose telephone number is (571)270-5351. The examiner can normally be reached on Monday-Thursday, 6:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT S. WALTERS JR/
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Examiner, Art Unit 1792

/Michael Barr/
Supervisory Patent Examiner, Art Unit
1792
